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PATENT ADMINSTRATOR
KATTEN MUCHIN ZAVIS ROSENMAN
525 WEST MONROE STREET
SUITE 1600
CHICAGO, IL 60661-3693

EXAMINER
CARRILLO, BIBI SHARIDAN

ART UNIT	PAPER NUMBER
1746	

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Please find below and/or attached an Office communication concerning this application or proceeding.

(417) -6

Office Action Summary	Application No. 09/976,024	Applicant(s) STRATFORD ET AL.	
	Examiner Sharidan Carrillo	Art Unit 1746	

-- Th MAILING DATE of this communication appears on the cover sh et with the correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) *13-23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-23* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *05* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

   I. Claims 1-12, drawn to a method of cleaning an injection mold, classified in class 134, subclass 6.

   II. Claims 13-24, drawn to an apparatus for cleaning an injection mold, classified in class 451, subclass 75.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the apparatus can be used for a different method such as cleaning of semiconductor wafers.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

3. During a telephone conversation with Ms. Don Hayes on 5/23/02 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-12. Affirmation of this election must be made by applicant in replying to this Office action. Claims 13-24 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite because it fails to positively recite a method of cleaning an injection mold. Claim 1 is indefinite because it recites maintaining a gas to ice ratio. However, there is no positive recitation of introducing a gas into the dry ice. Further, it is unclear whether gas to dry ice ratio refers to the ratio of gas to dry ice granules. It is unclear what is meant by gas to dry ice ratio. Specifically, it is unclear whether the ratio refers to volume, flow rate, or concentration of gas to dry ice. It is also unclear what is meant by positioning a nozzle tip from said surface. It is unclear which surface applicant intends. Further, the term "said surface" lacks positive antecedent basis. Claim 1 also recites "maintaining a flow rate". This phrase is indefinite because it is unclear whether the flow rate refers to that of the gas, the dry ice granules or both.

Claim 2 is indefinite because it is unclear the relationship between the mold ejection mechanism and the other components recited in claim 1. It is unclear what is meant by a mold

ejection mechanism. Further, it is unclear whether the surface to be cleaned refers to that of the injection mold.

Claim 3 is indefinite because it is unclear what is meant by the phrase "stroking a platen of said machine to maximize the daylight between a first and a second mold half". It is unclear how one of ordinary skill in the art strokes a platen. Further, it is unclear whether the first and second mold half pertains to the injection mold.

Claim 4 is indefinite because of its dependency. Claim 5 is indefinite because it is unclear what is meant by the gas to dry ice ratio. Claims 5-11 are further indefinite because of the term "preferably". Claim 6 is indefinite because it recites maintaining said gas flow rate, however claim 1 only recites a "flow rate". There is no recitation in claim 1 of a gas and/or a gas flow rate. The term "gas flow rate" lacks positive antecedent basis.

Claims 7 and 11 indefinite because it is unclear whether "a nozzle tip" is the same or different from the nozzle tip recited in claim 1. It is unclear whether "said surface" refers to a surface of an injection mold. Claim 9 is indefinite because of the phrase "gas to dry ice ratio" for the reasons recited previously. Claim 10 is indefinite because it is unclear what is meant by flow rate. Does the flow rate refer to the dry ice, the gas, or both. Claim 12 is indefinite because it is unclear what applicant means by the phrase "said mold is for the production of performs". Specifically, it is unclear what type of performs applicant intends.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-5, 7-9 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trampusch (5932026) in view Settles (5785581) and further in view of Opel et al. (5520572) .

Trampusch teaches a method of cleaning an inner wall of a mold using dry ice in a carrier gas medium. In reference to claim 1, Trampusch teaches opening a mold (col. 3, lines 12-15), producing dry ice granules from a supply unit 15, and positioning a nozzle tip 4 to deliver dry ice to the surface of the mold (col. 7, lines 10-20).

Trampusch fails to teach maintaining a gas to dry ice ratio. Settles teaches it is desirable to maintain an ice/gas mass flow rate ratio of as high as 1, so that the maximum possible kinetic energy is extracted from the gas stream and imparted to the particles (col. 11, lines 1-10).

It would have been obvious to a person of ordinary skill in the art to have modified the method of Trampusch to include maintaining a ice/gas flow rate ratio, as taught by Settles, for purposes of imparting kinetic energy from the gas stream to the ice particles.

In reference to claims 1, 4, and 8, Trampusch fails to teach maintaining a flow rate and producing dry ice granules having the claimed diameter size. Opel et al. teach an apparatus for producing carbon dioxide granules. In col.6, lines 35-40, Opel et al. teach a control valve 66 of maintaining a desired flow rate for acceleration of the granules in a gas stream. In col. 9, lines 15-20, Opel et al. teach producing granules having a size between 0.015-0.045 inches in order to perform efficient and uniform treatment of delicate workpiece surfaces (col. 3, lines 40-45).

It would have been obvious to a person of ordinary skill in the art to have modified the modified method of Trampusch to include maintaining a desired flow rate, as taught by Opel et al. for purposes of accelerating the granules in a gas stream. It would have been obvious to a person of ordinary skill in the art to have modified the modified method of Trampusch to include producing dry ice granules having diameters between 0.015-0.045 inches, as taught by Opel et al., for purposes of performing efficient and uniform treatment of delicate workpiece surfaces.

In reference to claims 2-3 and in view of the indefiniteness, the limitations are met since Trampusch teaches positioning an mold in a chamber 25. In reference to claims 5 and 9, the limitations are met by the teachings of Settles. Settles teaches a ice/gas ratio having a value of

up of 1. The claimed ratio of gas/dry ice of 2 and 3 would be equivalent to a dry ice/gas ratio of ½ and 1/3, which would therefore read on the teachings of Settles.

In reference to claims 7 and 11, Trampusch et al., as modified by Settles and further in view of Opel et al. fail to teach maintaining the specific distance of the nozzle from the surface. However, it would have been within the level of the skilled artisan to adjust the positioning of the nozzle tip from the surface since Trampusch et al. teach controlling the movement of the cleaning nozzle by a control unit. Further, one of ordinary skill in the art would have recognized the advantages of adjusting the position of the nozzle tip for purposes of providing and ensuring effective cleaning of the mold surface. In reference to claim 12 and in view of the indefiniteness, the limitations are met since Trampusch et al. teach cleaning a mold used for producing vehicle tires.

9. Claims 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trampusch (5932026) in view Settles (5785581) and further in view of Opel et al. (5520572), as applied to claims 1-5, 7-9, and 11-12 as described in paragraph 8 above, and further in view of Swain et al. (5125979).

Trampusch, as modified by Settles and further in view of Opel et al. teach the invention substantially as claimed with the exception of the gas flow rate. Swain et al. teach a method and apparatus for cleaning using carbon dioxide snow. In col. 7, lines 60-65, Swain et al. teach that excellent cleaning velocities are achieved when the flow rate is set to 14 SCFM.

It would have been obvious to a person of ordinary skill in the art to have modified the modified method of Trampusch to include adjusting the flow rate, as taught by Swain et al., for purposes of achieving excellent cleaning velocities.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Weber teaches a tire mold cleaning method and apparatus Goenka teaches a carbon dioxide nozzle. Soska and Nagy et al. teach a robotic laser tire mold cleaning method. Kuri et al. teach a device for cleaning dry ice. Almodovar et al. teach a tire mold cleaning process. Iwatani teaches a metallic mold cleaning apparatus. Brandt et al. teach dry ice blasting of tire molds. Tawara teaches a method of cleaning a tire mold.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharidan Carrillo whose telephone number is 703-308-1876. The examiner can normally be reached on Monday-Friday, 6:00a.m-2:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on 703-308-4333. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7719 for regular communications and 703-305-7719 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Sharidan Carrillo
Primary Examiner
Art Unit 1746

SHARIDAN CARRILLO
PRIMARY EXAMINER

bsc
May 29, 2002